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App. No. 10/590,552
Office Action Dated July 7, 2009

IN THE CLAIMS

Amendments to the claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1-55. (Canceled)

56. (Currently amended) A method of judging a biological activity in an environment contaminated with an organochlorine compound that is at least one of tetrachloroethylene (PCE) and trichloroethylene (TCE), the method comprising:

amplifying a nucleic acid extracted from an environmental sample by a gene amplification method so as to use the amplified product as a target;

hybridizing the target to a DNA probe including a base sequence unique to each of 17 types of anaerobic bacteria denoted below as A to Q, which are related to degradation of the organochlorine compound, in an attempt to detect the 17 types of bacteria in the environment; and

judging capability of the environment to eliminate the organochlorine compound based on degrading capability of the each of 17 types of bacteria that is detected with respect to the organochlorine compound and a dechlorinated product thereof,

wherein the DNA probe is ~~any one~~ a combination of 87 types of DNA probes, each of which is ~~specific to~~ bonded specifically to an internal transcribed spacer region of any one of the 17 types of bacteria denoted below as A to Q without occurrence of cross-hybridization, and each of the 87 types of DNA probes has any one of base sequences described below in (1) ~~[[to]]~~ or (4):

(1) A base sequence represented by each of SEQ ID NOS: 19 to 105 of the Sequence Listing~~[[.]].~~

~~(2) A base sequence obtained by deletion, substitution or insertion of one to several bases in the base sequence described in (1) and is hybridizable to a complementary sequence of the base sequence described in (1) under a stringent condition.~~

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~~(3) A base sequence obtained by deletion, substitution or insertion of one to several bases in the base sequence described in (1) and has a homology of 90% or higher with the base sequence described in (1).~~

(4) A base sequence complementary to each of the base sequences described in (1) to (3).

A: Dehalospirillum multivorans

B: Desulfitobacterium frappieri

C: Actinomycetales Sm-1 (Rhodococcus sp. Sm-1)

D: Rhodococcus rhodococcus

E: Xanthobacter flavus

F: Mycobacterium L1

G: Desulfomicrobium norvegicum (Desulfovibrio baculatus)

H: Desulfitobacterium dehalogenans

I: Desulfitobacterium hafniense

J: Clostridium formicoaceticum

K: Desulfuromonas chloroethenica

L: Acetobacterium woodii DSM 1030

M: Dehalobacter restrictus

N: Desulfitobacterium sp. strain PCE1

O: Desulfitobacterium frappieri TCE1

P: Acetobacterium woodii DSM 2396

Q: Desulfomonile tiedjei DCB-1.

57-58. (Canceled)

59. (Previously presented) The method according to claim 56,

wherein the gene amplification method with respect to the nucleic acid uses as a sense primer, a primer that contains a polynucleotide comprising a base sequence represented by SEQ ID NO: 116 of the Sequence Listing, and as an antisense primer, a primer that contains a polynucleotide comprising a base sequence represented by SEQ ID NO: 117 of the Sequence Listing.

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60. (Previously presented) The method according to claim 56,
wherein the contaminated environment is selected from a group consisting of soil,
groundwater, pond water and seawater.

61. (Previously presented) A bioremediation method with respect to an environment
contaminated with an organochlorine compound that is at least one of PCE and TCE, the
method comprising steps of:

judging a biological activity in the environment by the method according to claim 56;
and

stimulating, when a bacterium related to degradation of the organochlorine compound
is detected, growth and/or an activity of the bacterium so as to enhance the degradation of the
organochlorine compound or a dechlorinated product of the organochlorine compound.

62. (Currently amended) A bioremediation method with respect to an environment
contaminated with an organochlorine compound that is at least one of PCE and TCE, the
method comprising steps of:

judging a biological activity in the environment by the method according to claim 56;
and

adding at least one of the types of bacteria related to degradation of the organochlorine
compound other than a detected bacterium to the environment so as to enhance the
degradation of the organochlorine compound or a dechlorinated product of the organochlorine
compound.

63. (Previously presented) A device for detecting the bacteria used in the method
according to claim 56 comprising the 87 types of DNA probes that are immobilized,
wherein the device allows the 17 types of bacteria to be detected at the same time.

64-65. (Canceled)

66. (Previously presented) A DNA microarray that is used in the method according to
claim 56 comprising a substrate on which the 87 types of DNA probes are immobilized,

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wherein the DNA microarray allows the 17 types of bacteria to be detected at the same time.

67-68. (Canceled)

69. (Previously presented) A kit for detecting the bacteria used in the method according to claim 56 comprising:

the 87 types of DNA probes; and

a primer for gene amplification and a reagent for gene amplification that are used for preparing a target to be hybridized to the 87 types of DNA probes so as to be detected.

70-71. (Canceled)

72. (Previously presented) A kit for detecting the bacteria used in the method according to claim 56 comprising:

a DNA microarray comprising a substrate on which the 87 types of DNA probes are immobilized; and

a primer for gene amplification and a reagent for gene amplification that are used for preparing a target to be hybridized to the 87 types of DNA probes so as to be detected.

73. (Canceled)